

## Elevated Sulfate Levels

Submitted to Jim David, St. Lucie County Mosquito Control

## Overview

Elevated sulfate deposits in the Central Indian River Lagoon were identified during ORCA's *Save the Water Babies* project with Indian River Charter High School, funded by Indian River Impact 100. Initial sediment testing was performed to determine relative toxicity, total nitrogen and phosphorus levels of the project area. Analyses of sediment was completed with the use of Microtox, a low cost analysis technique ORCA has validated for sediment testing with funding provided by St. Lucie County Mosquito Control, and standard laboratory test procedures. Results revealed a high general toxicity level throughout the project area with large phosphorus sinks and smaller sinks of nitrogen.

Further testing was performed to determine the origin of the high toxicity levels. Selected sample sites were identified and tested for copper, zinc and sulfates. Sulfates were found throughout the project area with high concentrations in the northern portion of the project area as indicated by the map in figure 1.

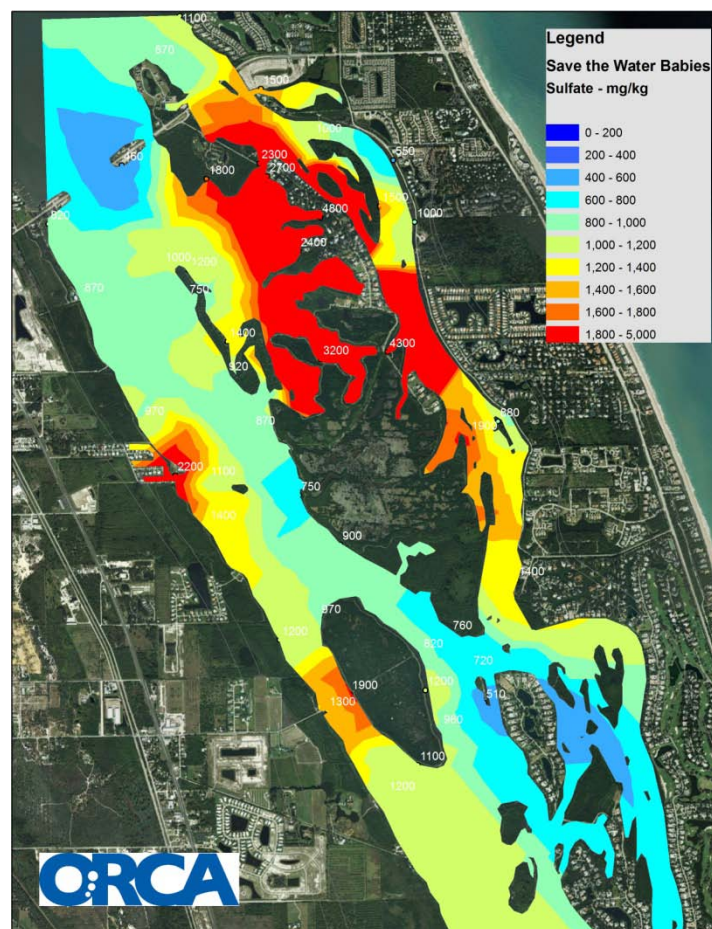


Figure 1 – ORCA gradient map of sulfate deposits in the Central Indian River Lagoon North of Vero Beach.

## Conditions of Area

At selected sample sites students were examining the depth of muck and sampling water quality with electronic and manual methods. Of the sites tested muck depths ranged from 0.15 meters to the highest depth measurement of 1.49 meters in the northern range of the project area. pH ranges were 7 to 9 throughout the project area with pH lower in the northern range. Water temperature ranged from 21 to 32 degrees C. Salinity measurements ranged from 7 to 35 ppm and DO ranges were from 6.9 to 8.02 ppm. At the time of sampling no seagrass was identified at any sample sites throughout the project area.

Figure 2 displays results of a 2009 survey of seagrass beds in the Central Indian River Lagoon. Visual inspection by ORCA scientist and students revealed no existing seagrass beds throughout the project area.

